Appendix I

Conformity Analysis and Emission Calculations

APPENDIX I

CONFORMITY ANALYSIS AND EMISSION CALCULATIONS

Clean Air Conformity and Applicability

The Clean Air Act (CAA) contains the legislation that mandates the general conformity rule to ensure that federal actions in nonattainment and maintenance areas do not interfere with a state's timely attainment of the NAAQS. The general conformity rule divides the air conformity process into two distinct areas: applicability analysis and conformity determination. The applicability analysis process requires federal agencies to determine if their proposed action(s) would increase emissions of criteria pollutants above preset threshold levels (40 CFR §93.153). These threshold rates vary depending on severity of the nonattainment and geographic location.

De Minimis Emissions and Applicability Thresholds

De minimis emissions are total direct and indirect emissions of a criteria pollutant caused by a federal action in a nonattainment or maintenance area at rates less than specified applicability thresholds. Federal regulations designate AQCR 47 as a moderate nonattainment area for the 8-hour Ozone standard. AQCR 47 is also inside an ozone transport region. Therefore, NE-07 Project applicability thresholds are 100 tons per year for NO_x and 50 tons per year for VOCs (Table H-1).

Table I-1
Applicability Thresholds for Nonattainment Areas

Criteria Pollutants	**TPY**
O_3 (VOCs or NO_x)	
Serious NAAs	50
Severe NAAs	25
Extreme NAAs	10
Other O_3 NAAs outside an O_3 transport region	100
Marginal and moderate NAAs inside an O_3 transport region	
VOC	**50**
NO_x	**100**
CO	
All NAAs	100
SO_2 or NO_x	
All NAAs	100
PM_{10}	
Moderate NAAs	100
Serious NAAs	70
Pb	
All NAAs	25

TPY = tons per year
Source: 40 CFR §93.153

Table I-2
Applicability Thresholds for Maintenance Areas

Criteria Pollutants	TPY
O_3 (NO_x, SO_2 or NO_2)	
All maintenance areas	100
O_3 (VOCs)	
Maintenance areas inside an O_3 transport region	50
Maintenance areas outside an O_3 transport region	100
CO	
All maintenance areas	100
PM_{10}	
All maintenance areas	100
Pb	
All maintenance areas	25

TPY = tons per year
Source: 40 CFR §93.153

Regionally Significant

The conformity regulation defines "regionally significant" emissions as the total direct and indirect emissions of a federal action that represents 10 percent or more of an area's total emissions for a criteria pollutant. A general conformity determination would be required if emissions are regionally significant, even if they are *de minimis*.

Construction Emissions Calculations

VOC and NO_x emissions from demolition and construction activities were estimated (Tables H-3 to H-5). These estimates include emissions from the following activities:

- Use of construction equipment;
- Movement of trucks carrying construction materials; and,
- Construction worker's commutes.

Construction equipment emissions were based on the estimated hours of use and emission factors (EFs) for each motorized source outlined in the following documents:

- Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling --Compression-Ignition (USEPA 2004a);
- Exhaust Emission Factors for Nonroad Engine Modeling -- Spark-Ignition (USEPA 2004a);
- Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling (USEPA 2004a); and
- Nonroad Engine Population Estimates (USEPA 2004a).

The equipment and vehicle operation hours are estimated based on R.S. Means Building Cost Construction Data, 64th Annual Edition (Waier 2006) and field experience from similar projects (Tables H-3 to H-5).

Applicability Determination

Since estimated emission rates for the proposed action alternative would be *de minimis* and would not be not regionally significant, a general conformity determination is not required (Table H-4).

TABLE I-3
Construction Equipment Estimated Operating Hours For All Project Components

Equipment	Total Operating Hours
Chain Saws < 6 HP	5812.9
Trimmers/Edgers/Brush Cutter	44.9
Lawn mowers	67.4
Shredders < 6 HP	9
Lawn & Garden Tractors	78.6
Chippers/Stump Grinders	5839.9
Generator Sets	10421.1
Air Compressors	5945.9
Pavers	13.5
Plate Compactors	6100.8
Rollers	10154.6
Scrapers	10141.1
Trenchers	10141.1
Excavators	11589.9
Cement & Mortar Mixers	528.4
Cranes	528.4
Graders	20282.3
Off-highway Trucks	52172.9
Tractors/Loaders/Backhoes	20810.7
Crawler Tractor/Dozers	20282.3

TABLE I-4
Total Construction Emissions For Non-Attainment Air Quality Control Regions (AQCR)

AQCR / Project Component	County	NO_x [tpy]	$PM_{2.5}$ [tpy]	SO_2 [tpy]	VOC [tpy]
AQCR 042 Hartford – New Haven – Springfield Interstate					
Building Addition Southeast Compressor Station	Putnam County	0.36	0.02	0.05	0.03
Commuting Construction Workers	Putnam County	0.59	NA	NA	0.43
TOTAL		**0.95**	**0.02**	**0.05**	**0.46**
AQCR 043 NY-NJ-CT Interstate					
39 Miles of Pipeline	Orange County	35.43	2.09	5.28	2.22
4 Miles of Pipeline	Rockland County	3.63	0.21	0.54	0.23
5 Miles of Pipeline	Rockland County	4.54	0.27	0.68	0.28
Building Addition Hanover Compressor Station	Morris County	0.23	0.01	0.03	0.02
New Brookfield Compressor Station	Fairfield County	5.65	0.35	0.83	0.48
New Brookfield Meter Station	Fairfield County	0.48	0.03	0.07	0.04
New Oxford Compressor Station	New Haven County	7.09	0.43	1.05	0.60
Upgrades to the Ramapo Meter Station	Rockland County	0.12	0.01	0.02	0.01
Commuting Construction Workers		7.23	NA	NA	5.27
TOTAL		**57.18**	**3.40**	**8.50**	**3.88**
AQCR 160 Genesee-Finger Lakes Intrastate					
32 miles of Pipeline	Ontario County	29.07	1.71	4.34	1.82
Mainline Valve / Interconnect Facility	Ontario County	0.14	0.01	0.02	0.01
New Oakfield Compressor Station	Genesee County	3.61	0.22	0.53	0.31
Commuting Construction Workers		3.91	NA	NA	2.85
TOTAL		**36.73**	**1.94**	**4.89**	**4.99**
AQCR 161 Hudson Valley Intrastate					
Dover Compressor Station	Dutchess County	0.59	0.04	0.09	0.05
Commuting Construction Workers	Dutchess County	0.59	NA	NA	0.43
TOTAL		**1.18**	**0.04**	**0.09**	**0.48**
***de minimis* Threshold [tpy]**		**100.00**	**100.00**	**100.00**	**50.00**
Exceeds *De Minimis* Threshold? [Yes/No]		**No**	**No**	**No**	**No**
Regionally Significant? [Yes/No]		**No**	**No**	**No**	**No**

TABLE I-5
Emission for Commuting Construction Workers

Project	Vehicle Type	Number of Workers	Days Per Year	Round Trip Miles	EF NOx [g/mile]	NOx [tpy]	EF VOC [g/mile]	VOC [tpy]
AQCR 042 - Building Addition Southeast Compressor	LDGV	75	57	30	1.86	0.26	1.22	0.17
AQCR 042 - Building Addition Southeast Compressor	LDGT	75	57	30	2.31	0.32	1.82	0.26
					TOTAL	**0.59**		**0.43**
AQCR 043 - 39 miles of pipeline construction	LDGV	150	113	30	1.86	1.05	1.22	0.69
AQCR 043 - 39 miles of pipeline construction	LDGT	150	113	30	2.31	1.30	1.82	1.02
AQCR 043 - 4 miles of pipeline construction	LDGV	150	19	30	1.86	0.17	1.22	0.11
AQCR 043 - 4 miles of pipeline construction	LDGT	150	19	30	2.31	0.22	1.82	0.17
AQCR 043 - 5 miles of pipeline construction	LDGV	150	19	30	1.86	0.17	1.22	0.11
AQCR 043 - 5 miles of pipeline construction	LDGT	150	19	30	2.31	0.22	1.82	0.17
AQCR 043 - Building Addition Hanover Compressor Station	LDGV	75	57	30	1.86	0.26	1.22	0.17
AQCR 043 - Building Addition Hanover Compressor Station	LDGT	75	57	30	2.31	0.32	1.82	0.26
AQCR 043 - New Brookfield Compressor Station	LDGV	75	113	30	1.86	0.52	1.22	0.34
AQCR 043 - New Brookfield Compressor Station	LDGT	75	113	30	2.31	0.65	1.82	0.51
AQCR 043 - New Brookfield Meter Station	LDGV	75	57	30	1.86	0.26	1.22	0.17
AQCR 043 - New Brookfield Meter Station	LDGT	75	57	30	2.31	0.32	1.82	0.26
AQCR 043 - New Oxford Compressor Station	LDGV	75	113	30	1.86	0.52	1.22	0.34
AQCR 043 - New Oxford Compressor Station	LDGT	75	113	30	2.31	0.65	1.82	0.51
AQCR 043 - Upgrades to the Ramapo Meter Station	LDGV	75	57	30	1.86	0.26	1.22	0.17
AQCR 043 - Upgrades to the Ramapo Meter Station	LDGT	75	57	30	2.31	0.32	1.82	0.26
					TOTAL	**7.23**		**5.27**
AQCR 160 - 32 miles of pipeline Construction	LDGV	150	113	30	1.86	1.05	1.22	0.69
AQCR 160 - 32 miles of pipeline Construction	LDGT	150	113	30	2.31	1.30	1.82	1.02
AQCR 160 - Mainline Valve / Interconnect Facility	LDGV	75	38	30	1.86	0.17	1.22	0.11
AQCR 160 - Mainline Valve / Interconnect Facility	LDGT	75	38	30	2.31	0.22	1.82	0.17
AQCR 160 - New Oakfield Compressor Station	LDGV	75	113	30	1.86	0.52	1.22	0.34
AQCR 160 - New Oakfield Compressor Station	LDGT	75	113	30	2.31	0.65	1.82	0.51
					TOTAL	**3.91**		**2.85**
AQCR 161 - Dover Compressor Station	LDGV	75	57	30	1.86	0.26	1.22	0.17
AQCR 161 - Dover Compressor Station	LDGT	75	57	30	2.31	0.32	1.82	0.26
					TOTAL	**0.59**		**0.43**

LDGT – Light Duty Gasoline Trucks
LDGV – Light Duty Gasoline Vehicles

References

U.S. Environmental Protection Agency (USEPA). 2004a. Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling --Compression-Ignition, NR-009c. EPA420-P-04-009.

U.S. Environmental Protection Agency (USEPA). 2004b. Exhaust Emission Factors for Nonroad Engine Modeling -- Spark-Ignition, NR-010d. EPA420-P-04-010.

U.S. Environmental Protection Agency (USEPA). 2004c. Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling, NR-005c. EPA420-P-04-005.

U.S. Environmental Protection Agency (USEPA). 2004d. Nonroad Engine Population Estimates, NR-006b. EPA420-P-02-004.

Waier, Phillip R. 2006. Building Cost Construction Data, 64th Annual Edition, R.S. Means Construction Publishers and Consultants, Kingston, MA.